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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,537	10/22/2004	Istvan Knoll	742111-159	6354
25570 7590 07/06/2007 ROBERTS, MLOTKOWSKI & HOBBS P. O. BOX 10064 MCLEAN, VA 22102-8064			EXAMINER ALI, MOHAMMAD M	
			ART UNIT 3744	PAPER NUMBER
			MAIL DATE 07/06/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No:

10/501,537

Applicant(s)

KNOLL, ISTVAN

Examiner

Michael J. Early

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 July 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 10/22/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### **Claim Objections**

Claims 2-10 are objected to because of the following informalities:

- The preamble for each claim recites: "A submerged evaporator according to claim 1, wherein...". The terms "A submerged evaporator" should be removed and replaced with --The submerged evaporator--. Claims 2-10 are dependent upon claim 1 and thus, reference the submerged evaporator initially recited in claim 1.

Appropriate correction is required.

### **Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

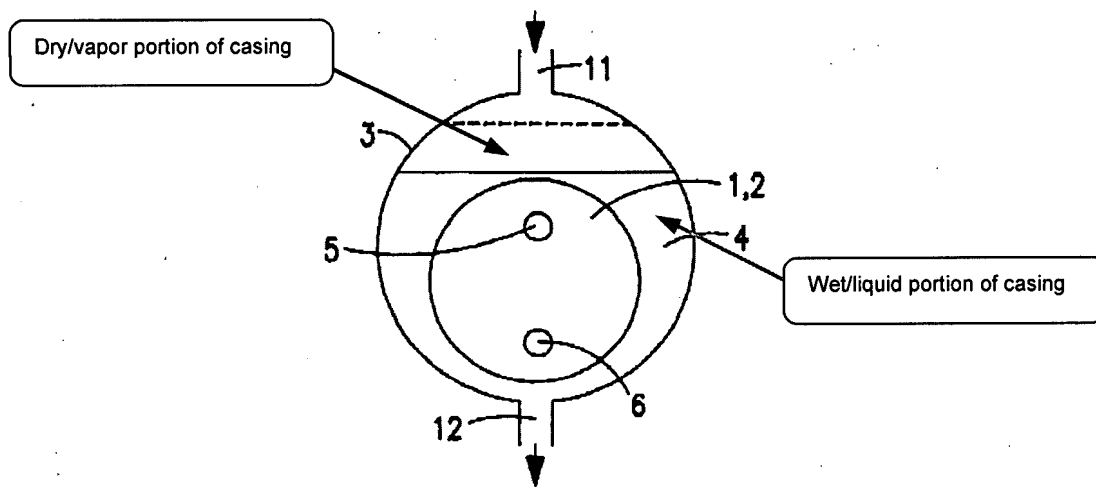
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Lampinen et al. (US 6,158,238).

Regarding claim 1, Lampinen et al. disclose a submerged (as seen in the illustration of Figure 6 below) evaporator (1, 2 – plate heat exchangers) contained in a casing (3 – shell) and including at least one integrated plate heat exchanger (heat exchangers [1, 2] are integrated with respect to the connectors [5, 6, 7, 8]; Figure 6), where the integrated plate heat exchanger has at least one inlet connection (5, 7 – connectors) and at least one outlet connection (6, 8 – connectors) for a secondary refrigerant (as seen in Figure 6), where the plate heat exchanger is disposed at the bottom of the casing (as seen in Figure 6), where a primary refrigerant (water) may flow around the plate heat exchanger (see col. 6, lines 24-34, 65-67) and a secondary refrigerant may flow through the plate heat exchanger (see col. 6, lines 43-50), and where the uppermost part of the casing is

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used as a liquid separator (as seen in Figure 6), wherein the integrated plate heat exchanger is integrated with the evaporator (as seen in Figure 7) and made with an outer contour that substantially follows the lower contour of the casing and the liquid level of the primary refrigerant (as seen in Figures 6, 7).

**FIG. 6**

Regarding claim 2, Lampinen et al. disclose the longitudinal sides of the plate heat exchanger are closed for inflow or outflow of the primary refrigerant between the plates of the plate heat exchanger (as seen in Figures 6, 7), and wherein the bottom of the plate heat exchanger there is provided at least one opening through which the primary refrigerant flows in between the plates of the plate heat exchanger (as seen in Figure 7).

Regarding claim 7, Lampinen et al. disclose being adapted in order that secondary refrigerant may flow to and from the plate heat exchanger via one inlet connection and one outlet connection, respectively, at the upper edge of the plates (a user may

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selectivity close one of the inlet and outlet connections such that refrigerant only flows through the evaporator via one inlet connection and one outlet connection).

Regarding claim 8, Lampinen et al. disclose being adapted in order that secondary refrigerant may flow to and from the plate heat exchanger via one connection (7 – connector) at the bottom of the plates and one connection (8 – connector) at the upper edge of the plates, respectively (as seen in Figures 6, 7).

Regarding claim 9, Lampinen et al. disclose being adapted in order that secondary refrigerant may flow to and from the plate heat exchanger via one connection at the bottom of the plates (6 – connector) and two connections (5, 8 – connectors) at the upper edge of the plates, respectively (as seen in Figures 6, 7).

Regarding claim 10, Lampinen et al. disclose the casing contains a suction manifold (21 – dispersing plate) disposed in the "dry" part (as seen in the illustration of Figure 6 above) of the casing and extending in longitudinal direction of the evaporator with a length substantially corresponding to the length of the plate heat exchanger (as seen in Figure 6).

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lampinen et al. as applied to claim 1 above, and further in view of Gaylord, Jr. (US 2,655,350).

Lampinen et al. do not expressly disclose longitudinal guide plates and details related to the circulation of fluids between the evaporator and the guide plates.

Gaylord, Jr. teaches of the tube arrangement within an evaporator (heat exchanger) that is comprised of a plurality of tubes (T) and a case (M – manifold) and longitudinal guide plates (S – shell) (as seen in Figure 2). Gaylord, Jr. further discloses that the shells are positioned in such a manner that they surround the apparatus' tubes (as seen in Figure 2). Further disclosed is that the apparatus' plurality of shells are spaced apart from one another via apertures (E), which provide a means of allowing fluid to flow to and from the tubes (see col. 2, lines 7-19; Figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the existing apparatus of Lampinen et al. by incorporating guide plates that surround an evaporator, as taught by Gaylord, Jr., in order to provide a means to more readily separate fluids within the apparatus that are of different temperatures, thus increasing the apparatus' overall efficiency.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lampinen et al. as applied to claim 1 above, and further in view of Kontu (US 6,918,433 B2).

Lampinen et al. do not expressly disclose a pattern of guide grooves and details related thereto, or of one inlet and outlet for the secondary refrigerant and details related thereto.

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Kontu teaches of a plate heat exchanger that is comprised of a stack of plates (6) that have guide grooves (21, 22 – flow guides) etched upon the plates (see col. 3, lines 50-61; Figure 3). Through visual interpretation, Kontu further discloses that along the upper edge of the plates, the flow guides form an angle that is between 20° and 80° in relation to a horizontal plane (as seen in Figure 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the existing apparatus of Lampinen et al. by incorporating guide grooves that are between 20° and 80° relative to a horizontal plane of the apparatus, as taught by Kontu, in order to provide a means of inducing turbulence and to increase heat transfer within the apparatus (see col. 1, lines 44-55), thus increasing the apparatus' overall efficiency.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lampinen et al. as applied to claim 1 above, and further in view of Ertinger (US 4,437,322).

Lampinen et al. do not expressly disclose of the incorporation of a condenser or of a demister within the apparatus.

Ertinger teaches of a heat exchanger that is comprised of an evaporator (component disposed within evaporator section [16]) and a condenser (component disposed within condenser section [19]) (see Abstract). Ertinger further discloses that the condenser and evaporator sections are separated from one another via a plate (portion of plate [15] that extends beneath the bottom portion of the condenser section [19]) (as seen in Figure 2). Further disclosed is that the apparatus is comprised of a demister portion of plate [15] that extends beneath the bottom portion of the subcooler section [20]) that is located in the immediate vicinity of an outlet (as seen in Figure 2).

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Regarding claim 5, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the existing apparatus of Lampinen et al. by incorporating a condenser within the apparatus, as taught by Ertinger, in order to make the overall refrigeration circuit more compact, thus allowing the apparatus to be incorporated in a wider variety of applications.

Regarding claim 6, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the existing apparatus of Lampinen et al. by incorporating a demister within the apparatus, as taught by Ertinger, in order to ensure the separation of the fluids of different temperatures, thus providing a greater means of heat transfer between the apparatus' respective refrigerants.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lampinen et al.

Lampinen et al. do not expressly disclose one inlet connection at the bottom of the plates and two outlet connections at the upper edge of the plates.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to incorporate an inlet connection at the bottom portion of the plates and two outlet connections at the upper portion of the plates because the Applicant has not disclosed that having one inlet connection at the bottom portion of the plates and two outlet connections at the upper portion of the plates provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, therefore, would have expected the Applicant's invention to perform equally well with the single inlet and outlet connections of the bottom and upper portions of the plates, respectively, as taught by Lampinen et al. or the claimed single inlet and dual outlets because both configurations would perform the same function of allowing a refrigerant to flow through the apparatus and exchange heat within another refrigerant.



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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Early whose telephone number is (571) 272-3681. The examiner can normally be reached on Monday - Friday, 7am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael J. Early  
Patent Examiner  
Art Unit 3744



6/22/07

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SUPERVISORY PATENT EXAMINER

